Feed Costs in Single Site Versus Multi-Site Production Systems

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The 1990's have been the most exciting time of change in the hog industry in the past 25 years. New types of production building systems, including multi-site barns, have dominated these changes, fuelled by excellent hog prices. Some pioneers of these systems have reaped major profits by having large numbers of pigs hitting the high pig meat market at the right time in the hog cycle.

Pork producers owning single site traditional production systems have looked at the multi-site complexes, questioning whether their production methods are becoming obsolete. With very little actual research data to compare the different production systems the question becomes, "which system of hog production is the most economically, environmentally and socially sustainable in the future".

Economics will be the first question answered and with "Feed Costs" representing 40-70% of the cost of production (depending on the grain and market hog prices). It's importance is very significant.

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Single Site versus Multi-Site (Feed Cost Strategies)

In Ontario, traditional single site farms are typically land based, manufacturing feed on the farm, and therefore marketing their own corn producers through their hogs. Manure is then recycled back to the land resulting in reduced fertilizer costs and a lower cost of production of the corn per bushel. This type of production method also allows producers to market corn weekly through the hogs thereby obtaining an average yearly price return on their corn crop. If desired, profitability of the farm could then be calculated as a "Total Return per Bushel of Corn Fed".

Table #1 shows a six year average corn return ranging from $4.51 per bushel of corn to a high of $9.54 per bushel. This information was calculated using OMAFRA cost of production (excluding labour) and Kenpal's average feed costs on high lean diets using OMAFRA average commodity prices as the base.

In contrast to this, most but not all, multi-site production systems use purchased feed and therefore are more at the mercy of the commodity market on their feed costs as was seen during the summer of 1996 when corn prices skyrocketed

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sending major multi-site producers in North America scrambling to lock in a corn price.

Table 1 - Economics (High Performance Feed Costs) - Farrow to Finish

Production Year	1997**	1996	1995	1994	1993	1992
Market price (based on 84 kg carcass at 107 index)	167.18	169.87	136.62	132.12	136.62	117.74
Less the following expenses:						
Total Feed Costs:						
(incl. sows & boars)	79.27	90.53	68.30	67.40	63.12	60.41
*Operating Costs	43.23	43.23	43.23	43.23	43.23	43.23
Total Margin/pig	44.68	36.11	25.09	21.50	30.27	14.10
Equivalent Return/bushel of corn fed	5.11	4.13	2.87	2.46	3.46	1.61
Price per bushel if sold to elevator	3.86	5.41	3.66	3.43	2.92	2.90
Total return per bushel of corn	8.97	9.54	6.53	5.89	6.38	4.51

*Source: OMAFRA Pork News & Views, July/August '97 Issue, Labour costs are not included.

**Source: OMAFRA Pork News & Views, January/February '98 Issue

Note: Based on 8.75 bushels of corn/pig.

The differences in feed cost strategies may play a big role in total cost of production if grain and protein markets continue to be as volatile in the future as has been the case recently.

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Performance of Multi-Site Production

Performance advantages quoted by industry experts have the potential to greatly affect feed costs. Many people initially (especially in the U.S.) have seen big gains in growth rate, feed conversion and death loss with little affect on sow productivity when changing production systems directly from single site continuous flow to multi-site, all in, all out production. In order to evaluate these differences locally, Kenpal implemented a three site production system three years ago. Single source piglets at 14 days of age have been moved to Kenpal's off site nursery and kept for seven weeks until 63 days old. Several of these groups were then moved to off site straw bedded feedlot style barns to finish. Nursery performance results are shown in Table #2 as an average of 11 groups and includes ranges of performance between groups. Table #3 shows similar data for six groups of finishing pigs.

During the three year period of time, several different feeders were evaluated with some showing significant differences in feed wastage. In addition, different feeding protocols were evaluated resulting in almost a $3.00 feed saving per piglet in the nursery. Finishing pigs also compared summer versus winter in cold housing with a significant difference in feed efficiency. Commodity prices used in these averages to give cost per kg per gain were: corn $165/tonne, 48% SBM $350/tonne, Lacta-Fat 76 cents/litre.

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3-Site Production Kenpal Summary

Table #2 - Nursery Trials

	Average	Ranges
# Pigs	1690	
# Groups	11	
Days on Test	49	
Ave. start wt., kgs	4.62	(4.18-5.12)
Ave. end wt., kgs	27.31	(25.93-29.29)
Daily gain, gms	463	(422-501)
Feed/Gain ratio	1.71	(1.58-1.76)
Cost/pig, feed $	15.93	(14.14-18.65)
Cost/kg gain, $	0.725	(.670-.822)
Cost/pig, medication $	0.05	(0.-0.13)
Cost/pig, overall $	15.98	(14.27-18.65)
Mortality rate, %	0.7	(0-2.0)

Last 4 trials averaged $15.50/pig.

Estimated feed wastage of 5 to 10%.

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Table #3 - Grower/Finisher Trials

	Average	Ranges
Performance Data		
# Pigs	801	
# Groups	6	
Ave. start wt., kgs	27.75	(26.9-29.8)
Ave. end wt., kgs	103.15	(99.2-106.0)
Daily Gain, gms	853	(822-928)
Days to market	88.4	(84.3-92.7)
Total days to market (from birth)	151.4	(147.3-155.7)
Feed Data		
Average daily feed intake, kg	2.48	(2.21-2.78)
Feed Conversion	2.91	(2.67-3.16)
Cost/kg gain, $	0.762	
Cost/pig, $	57.42	
Carcass & Marketing Data		
Average dressed weight, kg	84.1	(81.3-87.2)
Average index	109	(107-111)
Average yield class	3.68	(2.98-4.18)
Average dressing percent	81.5	(81.1-82.2)

Reviewing the results of the averages shown and comparing the performance to well managed minimum disease on all in, all out single site Ontario hog farms, we "no difference in feed efficiency" with many of our customers exceeding our numbers. There is a slight trend to better days to market with Kenpal's average at

151.4 days to 84.1 kg dressed weight compared to many Ontario well managed farms at 150-165 days to market. If this is the case, single site all in all out production on medium size farms could be the most economical method.

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Feed Costs: Single Site Versus Multi-Site

In order to do an average comparison of feed costs, the summary of the multi-site average kg of feed per pig and cost per pig have been compared to Kenpal's G.E.M. feed usage program of pigs weaned at a traditional 28 days on single site, well managed farms. This data also includes sow and boar feed. Using feed cost values of corn $165/tonne, 48% SBM $350/tonne and Lacta-Fat at 75 cents/litre there is NO DIFFERENCE in total feed cost per pig produced.

Average Kenpal's
3 Site vs. Conventional
Farrow to Finish Production

Sow and Boar Feed	14 Day 3-Site	28 Day Conventional
Total feed (kg)	47.78	59.44
Total feed, $	11.66	14.82
Nursery Feed		
Total feed (kg)	37.00	31.50
Total feed, $	14.47	11.53
Finisher Feed		
Total feed (kg)	220.77	220.77
Total feed, $	57.42	57.42
Totals		
Feed (kg)	305.55	311.71
Cost, $	83.55	83.77
	Difference +0.22/pig	

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Summary:

In summary, it looks like feed cost on both production systems can be considered equal in well managed facilities with moderate to low disease challenges. The question of "which system of hog production is the most economically, environmentally, and socially sustainable in the future" will need much more research to answer.

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